Animal Science and Environment [18]

COURSE OUTLINE

(1) GENERAL

SCHOOL	ANIMAL BIOSCIENCES		
ACADEMIC UNIT	DEPARTMENT OF ANIMAL SCIENCE		
LEVEL OF STUDIES	Undergraduate [Major Elective]		
COURSE CODE	**18**	**SEMESTER**	**8th**
COURSE TITLE	ANIMAL SCIENCE AND ENVIRONMENT		

INDEPENDENT TEACHING ACTIVITIES	**WEEKLY TEACHING HOURS**	**CREDITS**
Lectures	4	3
TOTAL	**4**	**3**

COURSE TYPE	Scientific area
PREREQUISITE COURSES:	
LANGUAGE OF INSTRUCTION and EXAMINATIONS:	GREEK
IS THE COURSE OFFERED TO ERASMUS STUDENTS:	No
COURSE WEBSITE (URL):	https://oeclass.aua.gr/eclass/courses/292/
TEACHING STAFF:	Laliotis G., Pappas A., Kalogirou S., Paraskevas V.

(2) LEARNING OUTCOMES

Learning outcomes

Upon successful completion of the course, students will be able (according to Bloom) to:

- Understand the parameters that determine the environmental footprint of animal husbandry (**Knowledge / Comprehension**).
- Explain the effects of climate on terrestrial animals' and aquatic organisms' health, reproduction, and productivity (**Comprehension / Analysis**).
- Analyze the factors that quantitatively and qualitatively affect greenhouse gas emissions produced by animal farming (**Analysis / Evaluation**).
- Evaluate and propose methods for adaptation of livestock production to climate change (**Evaluation / Application**).
- Assess strategies for mitigating the environmental footprint of animal husbandry (**Evaluation / Synthesis**).
- Describe the parameters that affect livestock waste production and its management (**Knowledge / Comprehension**).
- Evaluate the impact of animal husbandry on biodiversity (**Analysis / Evaluation**).
- Explain the relationship between climate change and aquatic ecosystems and aquaculture (**Comprehension / Analysis**).

General Competences

- Respect for the natural environment
- Adapting to new situations
- Decision-making
- Search for analysis and synthesis of data and information, with the use of the necessary technology
- Project planning and management
- Production of free, creative, and inductive thinking

(3) SYLLABUS

• Factors affecting the environmental footprint of animal husbandry.
• Direct and indirect effects of climate on animal production
• Effects of climate and extreme weather conditions on animal production and specifically on the growth, reproduction, milk production, meat production and egg production of farm animals.
• Measures to cope with and adapt productive animals to climate change.
• Greenhouse gas emissions from farm animals and the various production systems.
• Factors affecting the carbon footprint of animal products produced.

• Methodologies for estimating gases emitted by livestock and strategies to reduce them.
• Livestock waste and ways to manage it to reduce its environmental footprint.
• Animal husbandry and biodiversity.
• Impact of climate change on aquaculture and aquatic ecosystems and aquaculture.

(4) TEACHING and LEARNING METHODS - EVALUATION

DELIVERY	Face to face and distance learning
USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY	-Lecture in a ppt format file uploaded in the e-class web page -Synchronous remote lecture delivery
TEACHING METHODS	
STUDENT PERFORMANCE EVALUATION	-Evaluation is conducted in Greek -Assessment by examination, with open ended questions and/or multiple choice

Activity	***Semester workload***
Lectures	40
Independent study	35
Course total (25 h of workload per ECTS)	***75***

(5) ATTACHED BIBLIOGRAPHY

(A) Suggested bibliography:
1. Ruminant Nutrition , 2013 (Ch. 9 Animal Husbandry and climate change).
2. Animal Science Review, Special Edition 35, 2009
3. Rojas-Downing, Pouyan Nejadhashemi, Harrigan, Woznicki, (2017). Climate change and livestock: Impacts, adaptation, and mitigation, Climate Risk Management, 16,145-163
4. Gerber, P.J., Steinfeld, H., Henderson, B., Mottet, A., Opio, C., Dijkman, J., Falcucci, A. &Tempio, G. (2013) Tackling climate change through livestock – A global assessment of emissions and mitigation opportunities. Food and Agriculture Organization of the United Nations (FAO), Rome.
5. FAO (2006), Livestock's long shadow: Environmental issues and options, Food and Agriculture Organization, Rome Italy
6. IPCC. (2006) IPCC Guidelines for National Greenhouse Gas Inventories. Volume 4 - Agriculture, Forestry and Other Land Use. Chapter 10 - Emissions from Livestock and Manure Management. Intergovernmental Panel on Climate Change.
7. De Vries, M., De Boer, I.J.M. (2010). Comparing environmental impacts for livestock products: A review of life cycle assessments. Livestock Science, 128(1-3), p. 1-11.

(B) Digital Educational Materials (e-class; in Greek):
G. Laliotis (2021). Livestock Production, Environment, climate change and production systems. Lectures in electronic format
G. Laliotis (2022). Methodologies for Greenhouse gas estimation. Lectures in electronic format.
G. Laliotis (2023). Introduction to livestock waste. Lectures in electronic format.
A. Pappas (2022). Bird nutrition and environment. Lectures in electronic format
I. Hatjigeorgiou (2022). Animal husbandry, grazing and the environment. Lectures in electronic format
S. Kalogirou (2023). Climate change and the effects on aquatic ecosystems and aquaculture. Lectures in electronic format
S. Kalogirou (2023). Fishery Production and Management. Lectures in electronic format.
S. Kalogirou (2023) Aquacultures, their effects on coastal waters and their environmental licensing framework. Lectures in electronic format